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What is claimed is:

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1. An apparatus for incremental data storage, the apparatus comprising:
  - a baseline partition containing a baseline image;
  - an incremental log configured to store data, the incremental log comprising at least one snapshot partition; and
  - a partition module configured to automatically partition the incremental log into an additional snapshot partition in response to a snapshot operation.
2. The apparatus of claim 1, wherein the partition module is further configured to assign a volume identifier to a newly formed partition as directed by a storage management policy.
3. The apparatus of claim 1, further comprising a storage management module configured to support storage management policies selected from the group consisting of temporal-based policies, status-based policies, and event-based policies.
4. The apparatus of claim 1, further comprising a compaction module configured to compact a snapshot partition.
5. The apparatus of claim 4, wherein the compaction module is further configured to conduct compaction as directed by a storage management policy.
6. The apparatus of claim 5, wherein the storage management policy is selected from the group consisting of a temporal-based policy, a status-based policy, and an event-based policy.
7. The apparatus of claim 4, wherein the compaction module is further configured to conduct in-place compaction.

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3 8. The apparatus of claim 4, wherein the compaction module is further configured to  
4 automatically compact a snapshot partition to the baseline volume.  
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6 9. The apparatus of claim 1, further comprising a copy module configured to copy  
7 selected log entries to the tertiary volume.  
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9 10. The apparatus of claim 1, further comprising a read module configured to retrieve  
10 the most recent data corresponding to a block address.  
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12 11. The apparatus of claim 1, wherein the read module is further configured to retrieve  
13 the most recent data corresponding to a specified snapshot volume and block address.  
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15 12. An interface for managing incremental data storage, the interface comprising:  
16 a write function configured to append an entry to an incremental log;  
17 a read function configured to retrieve a most recent log entry corresponding to a  
18 block address; and  
19 a snapshot function configured to automatically partition the incremental log into  
20 a first and a second volume.  
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22 13. The interface of claim 9, further comprising a policy assignment function configured  
23 to assign a policy to an incremental log.  
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25 14. The interface of claim 9, further comprising a read next entry function configured to  
26 retrieve a sequential entry from the incremental log.  
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1 15. The interface of claim 9, further comprising a compact volume function configured  
2 to compact a snapshot volume.

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4 16. The interface of claim 9, further comprising a delete volume function configured to  
5 release a snapshot volume.

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7 17. A method for managing incremental data storage, the method comprising:  
8 appending data to an incremental log;  
9 automatically partitioning the incremental log in response to a snapshot operation;  
10 and  
11 automatically assigning a volume identifier to a newly formed partition.

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13 18. The method of claim 17, wherein automatically assigning a volume identifier to a  
14 newly formed partition occurs as directed by a storage management policy.

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16 19. The method of claim 17, further comprising conducting in-place compaction of a  
17 snapshot partition.

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19 20. The method of claim 17, further comprising automatically compacting a snapshot  
20 partition.

1 21. An apparatus for managing incremental data storage, the apparatus comprising:  
2 means for appending data to an incremental log;  
3 means for automatically partitioning the incremental log in response to a snapshot  
4 operation;  
5 means for automatically assigning a volume identifier to a newly formed partition;  
6 and  
7 means for conducting in-place compaction of a snapshot partition.  
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9 22. A system for redundant incremental data storage, the system comprising:  
10 a primary storage device configured to store data;  
11 a secondary storage device configured to store data within a baseline volume and  
12 an incremental log comprising at least one snapshot partition that corresponds to a  
13 snapshot volume;  
14 a controller configured to store and access data on the primary and secondary  
15 storage device; and  
16 a snapshot management module configured to automatically partition the  
17 incremental log into an additional snapshot partition and associate the additional snapshot  
18 partition with a volume identifier in response to a snapshot operation.  
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20 23. The system of claim 22, wherein the snapshot management module is further  
21 configured to automatically compact a snapshot volume into the baseline volume in  
22 response to the snapshot operation.  
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24 24. The system of claim 22, wherein the snapshot management module is further  
25 configured to conduct in-place compaction of a snapshot partition.  
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1 25. The system of claim 22, wherein the primary storage device comprises a plurality of  
2 redundantly arranged storage devices.

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4 26. A computer readable image for managing incremental data storage, the computer  
5 readable image comprising program code configured to conduct a process comprising:

6 append data to an incremental log;

7 automatically partition the incremental log in response to a snapshot operation;

8 and

9 automatically assign a volume identifier to a newly formed partition.

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11 27. The computer readable image of claim 26, wherein the process further comprises  
12 conducting in-place compaction of a snapshot partition.

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14 28. The computer readable image of claim 26, wherein the process further comprises  
15 automatically assigning a volume identifier to a newly formed partition occurs as directed  
16 by a storage management policy.

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18 29. The computer readable image of claim 26, wherein the process further comprises  
19 conducting in-place compaction of a snapshot partition.

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21 30. The computer readable image of claim 26, wherein the process further comprises  
22 automatically compacting a snapshot partition.